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Scientometric Dimensions of Scientific Publications on Malaysian Journal of Library and Information Science, 1996 to 2014

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ABSTRACT

This paper aims to evaluate the scientific publication research productivity in Malaysian Journal of Library and Information Science (MJLIS) for period of nineteen years between 1996 and 2014 with total of 315 research publications. For the purpose of this present study, the various attributes of this publication to know about chronology wise total papers, total authors, total citations, average authors per paper, average citation per paper, exponential growth rate, degree of collaboration, collaborative index, relative growth rate, doubling time, co-authorship index, subject wise distribution, institution and country wise distribution and length of papers have also analyzed. The scientometric tools and techniques such as Degree of Collaboration, Collaborative Index, Exponential Growth Rate, and Co-authorship index for measuring the output so as to arrive the appropriate results and findings during the period of study. The results reveal that out of 315 papers, 8.89% are the greatest number of research outputs in the year 2011 and the lowest number 4.13% are in the year 1998. The highest number of average authors per paper is 2.90 in the year 2012 and the average Exponential growth rate is 1.007 and showing the increasing trend in the journal. The highest number of citations is in the year 2010 whereas the least number of citations are in 1998.

Keywords: Bibliometrics, Malaysian journal, Library Science, publication profile, author productivity, MJLIS.

1. SOURCE JOURNAL

For the study purpose, Malaysian Journal of Library and Information Science (MJLIS) have been taken into account. The first issue of volume 1 and number I was published in July 1996. Since its inception, MJLIS has served like medium to publish research papers in library and information science filed and also provides a forum for communication among LIS professionals and to introduce new concepts, systems and technology. This publication was published in print as well as electronic during the period between 1996 and 2008. But, from the year 2009 onwards, it has published via electronic form and indexed and abstracted by various databases.

2. RELATED WORK

Review of literature is the back bone of the research in any type of subjects or discipline. For the present study, we have listed appropriate earlier works which were done by the researchers and eminent scholars and scientists in the descending order. Velmurugan and Radhakrishnan (2015) have carried out the scientometric study on Open Software Engineering Journal (OSEJ) during the period between 2007 and 2013. The findings of the study showed that the highest numbers of articles were published in the year 2009 whereas the minimum numbers of articles were published in the year 2007 and 2011 respectively. The highest number (43.2%) of distribution of citations was in the year 2009 whereas the lowest number of citations was in 2008. The degree of collaboration in this journal ranges from 0.25 to 1.00 and the average degree of collaboration is 0.78. Velmurugan and Radhakrishnan (2015) have analyzed on Webology journal form the year 2007 to 2013 and the results found that the maximum numbers of research papers were produced by single authors and the smallest amount numbers of articles were published by co-authors. The majority of research articles were published during 2008 and the lowest numbers of scholarly papers were published in the year 2009. The greatest numbers of articles were contributed by Indian authors (18.99 %) and placed first rank and the degree of collaboration was 0.506.

Velmurugan and Radhakrishnan (2015) have examined the literature outputs of Journal of Information Literacy for the year from January, 2008 to December 2012. The results revealed that the highest contribution of research output i.e. 22.96 percentages were published in the year 2012 whereas the lowest contribution of research articles of 16.39 percentages were published in the year 2011. The highest numbers of author productivity (3.0) were published in the year 2009. The relative growth rate was decreased and the doubling time was higher than RGR as per the study. It was observed that relative growth rates (RGR) has decreased from 2009 (0.65) to 2012 (0.26) in the span of 4 years. The doubling time (DT) has been increased. Velmurugan (2014) has explored the research trends on Indian Journal of Pure and Applied Physics (IJPAP). The study has been conducted with 546 contributions published in the journal selected four years for a period between January, 2009 and December 2012. The findings showed that the highest numbers of author productivity were published in the year 2010. The degree of collaboration ranges from 0.90 to 0.92 and the average degree of collaboration is 0.915. The average length of the articles varied from a minimum of 6.31 pages in the year 2012 to a maximum of 7.08 pages in 2011. Velmurugan (2014) investigated the bibliometric study on Journal of Intellectual Property Rights (JIPR) during the year 2007-2012. The required data have been collected from the NISCAIR website of *Journal of Intellectual Property Rights* (JIPR). The major findings revealed that the highest numbers of contributions were published in the years 2012 whereas the minimum number of articles was published in the year 2010. The maximum articles were contributed by authors from India followed by United States was in the second position and China and United Kingdom respectively.

Velmurugan and Radhakrishnan (2014) have carried out the study on Indian Journal of Biotechnology selected six years for a period between 2007 and 2012. The result revealed that the highest number of contributions i.e., 87 (19.41 %) were published in the years 2007. The maximum number 97.33 % articles were contributed by joint authors and the rest of 2.67 % articles contributed by single author. The degree of collaboration in the journal Indian Journal of

Biotechnology is 0.97 and the average length of the articles varied from a minimum of 5.94 pages in the year 2012. The highest number of 13645 visitors watched the website has 21.48 % during the year 2010. Velmurugan and Radhakrishnan (2014) have made an attempt to analyze the contributions to *IETE Technical Review Journal* published during the year 2007 – 2012. The study revealed that the maximum number of contributions in the year 2012 (20.78 %) and it depicts that the year wise contributions are increased year by year. The Degree of Collaboration was high in terms of collaborators contribution and the individual authorship contribution responsible was very less (i.e. 44). The study analyzed the relative growth rates (RGR) has increased from 2007 (0.76) to 2012 (1.96) in the span of six years and the doubling time (DT) has slightly decreased. Velmurugan (2013) studied the bibliometric analysis on Annals of Library and Information Studies journal selected six years for a period between 2007 and 2012. A total of 203 articles retrieved through the official website for statistical analysis. The results revealed that the highest numbers of contributions (21.19 %) were published in the year 2010. The minimum number of (13.31 %) was published in the year 2012. The degree of collaboration ranges from 057 to 0.82 and the average degree of collaboration is 0.64.

Bansal (2013) has carried out the bibliometric study on DESIDOC Journal of Library and Information Science for the year 2001-2012. This paper focused on year wise growth of research articles, publication trend, authorship pattern, subject wise, country wise and citation wise distribution. The results revealed that the maximum numbers of scholarly papers were published in the year 2012. The highest numbers of contributions were multi authors. Dr. BM. Gupta had contributed maximum number of research papers during the period of study. Gupta; Bala; and Kshitig (2013) have carried out the World Cataract research publications output by way of scientometric study for the year 2002 to 2011. A total 27053 papers were contributed for cataract research during the period of study using Scopus database. The findings revealed that the average citation impact per article was 6.94 during 2002-11 and decreased from 7.82 during 2002-2006 and 5.21 during 2007-2011. Mamdapur, Rajgoli and Mamdapur (2013) studied on scientometric analysis of contributions in the Journal College and Research Libraries for period between 1997 and 2011. The results revealed that the average 32 papers were published every year. The most of the articles were published by single authors compared with joint authors. The average degree of collaboration was in this journal i.e. 0.57 and an average author per paper was 1.88 for 479 article during the period of study and Lotka's law was also tested and conferred to a value of n=3.22.

Mooghali et al (2011) have conducted the study on scientometric analysis in the field of scientometrics during the period 1980 and 2009. The findings of the results indicated that out of 691 articles only 183 papers i.e. 26.48% were written by top ten authors in the field of scientometrics. Serenko, Bontis and Grant (2009) have investigated the scientometric analysis of the Proceedings of the McMaster World Congress on the Management of Intellectual Capital and Innovation for period between 1996 and 2008. The results showed that the average papers were written by 1.73 authors and the USA, Canada and UK were the most productive countries. Davarpanah and Aslekia (2008) have identified the scientometric analysis in the field of Library and Information Science journals during 2000 and 2004. The results showed that 894 total articles published in 56 LIS journals and 1361 authors had contributed papers during the five years.

3. OBJECTIVES

To retrieve the results, the major objective of this present study is to understand the level of growth rate in the Malaysian Journal of Library and Information Science (MJLIS) for period of nineteen years between 1996 and 2014. The other objectives are to examine the authorship pattern, to find out the author productivity, to study the single and joint contributions of articles, to measure the Exponential Growth Rate, Degree of collaboration, Collaborative Index, pattern of co-authorship index, average authors per paper, average citation per paper, to evaluate the subject wise and institution wise and global wise distribution of contributions and length of articles during the study period.

4. MATERIALS AND METHOD

The indispensable data have collected from the official website (http://e-journal.um.edu.my/) of the Malaysian Journal of Library and Information Science (MJLIS). This journal was initially started to publish as half-yearly in the year 1996. Since 2009 onwards it has been publishing three times a year in the months of April, August and December by the Department of Library and Information Science at University of Malaya. For the purpose of this present study, forty four issues of nineteen volumes from the started year 1996 to till 2014 are selected in which the quantitative research papers have analyzed by year wise, number of authors, authorship productivity and degree of collaboration. The scientometric tools and techniques such as K. Subramanyam's Degree of Collaboration (DC) in quantitative terms, Collaborative Index (CI), Exponential Growth Rate (EGR), and CAI, in order to arrive the appropriate results and findings during the period of study.

5. DATA ANALYSIS

5. 1. Publication Analysis

A total number of 315 research articles published have taken into consideration for the current study that shows form the table 1 chart 1 during the period between 1996 and 2014. Out of 315 papers, 8.89% are the greatest number of research outputs in the year 2011 and the lowest number 4.13% are in the year 1998.

Table 1: Growth of Papers

Year	TP	TA	AAPP	TC	ACPP	EGR	DC	CI
1996	16	27	1.68	177	11.06	-	0.56	3.0
1997	16	37	2.31	488	30.5	1.00	0.56	4.11
1998	13	29	2.23	180	13.85	0.81	0.54	4.14
1999	15	23	1.53	361	24.07	1.15	0.33	4.6
2000	14	24	1.71	248	17.71	0.93	0.71	2.4
2001	14	26	1.86	350	25.0	1.00	0.57	3.25
2002	13	27	2.07	230	17.69	0.93	0.77	2.7
2003	16	25	1.56	235	14.68	1.23	0.44	3.57
2004	14	30	2.14	329	23.5	0.87	0.71	3.0
2005	14	30	2.14	287	20.5	1.00	0.57	3.75

2006	14	30	2.14	227	16.21	1.00	0.71	3.0
2007	14	28	2.00	296	21.14	1.00	0.64	3.11
2008	16	27	1.68	395	24.69	1.14	0.63	2.7
2009	18	35	1.94	555	30.83	1.12	0.5	3.89
2010	24	52	2.17	826	34.42	1.33	0.83	2.6
2011	28	72	2.57	817	29.18	1.17	0.89	2.88
2012	20	58	2.90	618	30.9	0.71	0.7	4.14
2013	22	60	2.73	584	26.55	1.10	0.86	3.16
2014	14	32	2.28	494	35.28	0.64	0.79	2.91
	315	**666**	**2.11**	**7697**	**24.43**	**18.13**	**0.67**	**3.2**

*TP- Total papers, TA- Total authors, TC- Total citations, AAPP-*Average authors per paper, *ACPP- Average citation per paper, ERG- Exponential growth rate, DC- Degree of collaboration, CI- Collaborative index*

The analysis has associated with author productivity of MJLIS that identified the entire average number of authors per paper range from 1.53 to 2.90. It is found that the highest number of average authors per paper is 2.90 in the year 2012. It can be observed that the year wise numbers of references that authors cited in their articles. There are 315 articles with total 7, 697 references during the year from 1996 to 2014 and indicates that the highest number of citations are 826 (10.73%) in the year 2010 whereas the small amount of number of citations are 180 (2.34%) in 1998 (chart 3).

Growth Rate is a measurement which is essential in any field. In meaning the growth of the number of publications in a particular discipline, this is often a measure of the annual increase or decrease. The exponential growth rate has identified and range is from 0.64 to 1.33. It is inferred from the table 1 shows that exponential growth rate of publication in the MJLIS during the period between 1996 and 2014 (19 years). The highest growth rate is 1.33 during 2010 with 24 research articles and followed by the next growth rate (1.23) with 16 research papers in the year 2003 and the third highest growth rate 1.17 with 28 publications during the year 2011. The lowest number of growth rate is 0.64 with 14 scholarly articles in 2014. It is also found that the average Exponential growth rate is 1.007 and the growth rate has positive value showing the increasing trend in the journal MJLIS.

The degree of collaboration (DC) is defined as the ratio of the number of collaborative research papers to the total number of research papers in the discipline during a certain period of time. The formula suggested by Subramanyam is used. It is expressed as:

$$C = \frac{N_m}{N_m + N_s}$$

Where,

C – is the degree of collaboration in a discipline; Nm - is the number of multi-authored research papers in the discipline published during a year; Ns - is the number of single authored papers in the discipline published during the same year. Using this formula, the Degree of Collaboration (DC) is determined for the present study.

C = 105 / 105 + 210 and the average value of C is = 0.67

Hence, it is found that the degree of collaboration in MJLIS journal is 0.67. The distribution of degree of collaboration from 1996 to 2014 is presented in table 1and chart 2.

The Collaboration Index (CI) means number of authors per joint paper. For this analysis, we have omitted the single authored papers which are equal to 1 always. To determine the mean number of authors per joint authored paper, the following formula has been used.

$$CI = \frac{\text{Total Authors}}{\text{Total Joint Papers}}$$

CI ranges from 2.4 to 4.14 and the average collaborative index is 3.2 per joint authored paper during the study period (table.1).

5. 2. Relative Growth Rate and Doubling Time

Year	No. of papers	Cum. no. of papers	W1	W2	R(a) W2-W1	Mean R (a) (1-2)	Doubling Time Dt (a)	Mean Dt (a) (1-2)
1996	16		2.77					
1997	16	32	2.77	3.46	0.69		1.00	
1998	13	45	2.56	3.81	1.25		0.55	
1999	15	60	2.71	4.09	1.38	1.71	0.50	0.45
2000	14	74	2.63	4.30	1.67		0.41	
2001	14	88	2.63	4.47	1.84		0.37	
2002	13	101	2.56	4.62	2.06		0.33	
2003	16	117	2.77	4.76	1.99		0.35	
2004	14	131	2.63	4.88	2.25		0.31	
2005	14	145	2.63	4.97	2.34		0.29	
2006	14	159	2.63	5.07	2.44		0.28	
2007	14	173	2.63	5.15	2.52		0.27	
2008	16	189	2.77	5.24	2.47	2.51	0.28	0.27
2009	18	207	2.89	5.33	2.44		0.28	
2010	24	231	3.18	5.44	2.26		0.31	
2011	28	259	3.33	5.56	2.23		0.31	
2012	20	279	2.99	5.63	2.64		0.26	
2013	22	301	3.09	5.71	2.62		0.26	
2014	14	**315**	2.77	5.75	2.98		0.23	
	315					**2.11**		**0.36**

Table 2: Relative Growth Rate and Doubling Time

It is very comprehensible that the relative growth rate of total literature outputs published has been gradually increased. The growth rate is 0.69 in 1997, which is increased up to 2.98 in 2014. The mean relative growth rate is 1.71 during the period 1996-2005 and it has increased i.e.

2.51 during the year 2006-2014. The overall study period of research articles have calculated and witnessed a mean relative growth rate is 2.11. Generally, the relative growth rate of publications of all sources in this journal has shown an increasing trend. The mean doubling time is 0.45 during the period 1996-2005 and it has decreased i.e. 0.27 for the period between 2006 and 2014. The overall study period of research papers have been witnessed a mean doubling time is 0.36. In general, the doubling time of scholarly publications of all sources in this journal has also shown a decreasing trend.

5. 3. Year wise Authorship Pattern

The year wise authorship pattern have discussed during the period of study for the year 1996-2014. It has observed from the Table 3 that the maximum number of the research articles have published by double authors 123 (39.05%), and followed by single author 105 (33.33%), 60 research papers have contributed by three authors (19.05) and the minimum number of contributions have published by more than four authors (3.18%). It finds from the study the majority of literature outputs have produced by multi- authors.

Table 3: Year wise authorship pattern

Year	Authors					Total papers	%
	1	2	3	4	> 4		
1996	7	7	2	0	0	16	5.08
1997	7	4	4	1	0	16	5.08
1998	6	3	2	1	1	13	4.13
1999	10	3	1	1	0	15	4.76
2000	4	10	0	0	0	14	4.44
2001	6	4	4	0	0	14	4.44
2002	3	6	4	0	0	13	4.13
2003	9	5	2	0	0	16	5.08
2004	4	7	1	1	1	14	4.44
2005	6	6	1	0	1	14	4.44
2006	4	6	2	2	0	14	4.44
2007	5	6	2	0	1	14	4.44
2008	6	9	1	0	0	16	5.08
2009	9	4	2	3	0	18	5.72
2010	4	13	6	1	0	24	7.62
2011	3	14	7	2	2	28	8.89
2012	6	3	7	2	2	20	6.36
2013	3	8	7	2	2	22	6.99
2014	3	5	5	1	0	14	4.44
Total	**105**	**123**	**60**	**17**	**10**	**315**	**100**
Cum. Authors	**105**	**246**	**180**	**68**	**67**	**666**	
%	**33.33**	**39.05**	**19.05**	**5.39**	**3.18**	**100.0**	

5. 4. Pattern of Co-Authorship Index (CAI)

Co-Authorship Index (CAI) has obtained as a result of measuring the scientific publications by single, two and multi authored papers. For the present study, the formula has been employed for Co-Authorship Index which was developed by Garg and Padhi (1999).

$$CAI = \frac{Nij / Nio}{Noj / Noo} \times 100$$

Where, Nij = Number of papers having authors in block I; Nio = Total output of block I; Noj = Number of papers having j authors for all blocks; Noo = Total number of papers for all authors and all blocks.

CAI = 100 implies that a country's co-authorship effort for a particular category of authorship related to the world average, CAI > 100 reflects higher than average co-authorship effort, and CAI < 100 lower than average co-authorship effort by that country for a given type of authorship pattern. To measure the co-authorship index (CAI) for authors has been replaced by block. For this present study, the authors have been classified into four blocks, vz Single, Two, Three and more than three authors and the results of Co-authorship index as per the formula have been presented in the Table 4.

Year	Single author		Two authors		Three authors		More than three authors		Total
	No	CAI	No	CAI	No	CAI	No	CAI	
1996	7	112	14	125	6	93	0	0	27
1997	7	81	8	54	12	136	4	95	31
1998	6	88	6	52	6	88	11	341	29
1999	10	192	6	69	3	54	4	161	23
2000	4	71	20	228	0	107	0	0	24
2001	6	100	8	80	12	187	0	0	26
2002	3	60	12	106	12	220	0	0	27
2003	9	207	10	92	6	114	0	0	25
2004	4	70	14	111	3	47	9	170	30
2005	6	111	12	94	3	47	9	170	30
2006	4	70	12	94	6	94	8	147	30
2007	5	100	12	100	6	100	5	100	28
2008	6	212	18	200	3	35	0	0	27
2009	9	260	8	70	6	57	12	140	35
2010	4	73	26	153	18	113	4	26	52
2011	3	38	28	119	21	95	20	109	72
2012	6	100	6	29	21	117	25	170	58
2013	3	47	16	77	21	117	20	127	60
2014	3	88	10	88	15	155	4	44	32
Total	**105**		**246**		**180**		**135**		**666**

Table 4: Pattern of Co-Authorship Index

It is identified from the above table 6, the CAI for single authors is declined from 112 in the year 1996 to 88 in the year 2014 and the CAI for double authors has also declined from 125 in the year 1996 to 88 in the year 2014. On the other hand, the CAI for three authors has improved from 93 in the year 1996 to 155 in the year 2014. It indicates that the positive trend of pattern of co-authorship has increased among the contributors of this journal. But, there is a fluctuation trend of CAI for more than three authored contribution during the period of study.

5. 5. Subject wise distribution

Out of 315 research publications, the majority of 114 (36.19%) articles are published based on Bibliometrics / Scientometric Studies and it has placed in the first rank, and followed by 29 (9.22%) research papers under the category of user studies area and it has ranked number 2. The third rank has got by the subjects such as information sources and services and digital libraries each 22 papers (6.98%). The least number of papers are by the subjects such as Special Libraries, Library Historiography, Knowledge Management and e- Commerce are contributed (each 2 articles) by the researchers and placed in the last position and it seems to be that LIS professionals and research scientists are not interesting to publish their research articles on those subjects (Table 5).

Rank	Subjects	Articles	%
1	Bibliometrics / Scientometric Studies	114	36.19
2	User Studies	29	9.22
3	Information Sources and Services	22	6.98
3	Digital Libraries	22	6.98
4	Academic Libraries	17	5.40
5	LIS Education	14	4.45
5	Webology and Internet based studies	14	4.45
6	Information Literacy	13	4.13
7	Public Libraries	11	3.50
7	Collection Development	11	3.50
8	School and Children Libraries	8	2.54
9	Libraries and Information Professionals	7	2.22
9	Information Retrieval	7	2.22
10	Information Management	6	1.90
10	Legal Issues in LIS	6	1.90
10	Cataloguing and Classification	6	1.90
11	Special Libraries	2	0.63
11	Library Historiography	2	0.63
11	Knowledge Management	2	0.63
11	e- Commerce	2	0.63
	Total	**315**	**100.0**

Table 5: Subject wise distribution

5. 6. Country wise distribution

Table 6 describes the distribution of research articles contributed by country wise, out of 315 scholarly papers, the maximum number of (42.86 %) contributions are from Malaysia which has placed the first rank and followed by 15.87% are contributed by India and has got the second rank and 4.76% of contributions came from Iran is the third position and 4.13% of contributions came from Bangladesh and 3.49% from Taiwan; 3.18% from China and Singapore; 2.85% from Nigeria; 2.54% from Sri Lanka; 2.22% from Kuwait; 1.90% from Botswana, 1.59% from Pakistan, Thailand and USA and other countries such as Australia, UK, Jordan, Indonesia, South Korea, Belgium, Brunei, Kenya, New Zealand, Spain, Sudan, Turkey, Yemen, Rajasthan, Poland and Czech Republic are contributed very least number of publications. However, it is inferred that out of above mentioned thirty countries, compared with other countries, Malaysia gives much more priority for research purposes.

S. No	Country	No of Articles	% of Records	Rank
1	Malaysia	135	42.86	1
2	India	50	15.87	2
3	Iran	15	4.76	3
4	Bangladesh	13	4.13	4
5	Taiwan	11	3.49	5
6	China	10	3.18	6
7	Singapore	10	3.18	6
8	Nigeria	09	2.85	7
9	Sri Lanka	08	2.54	8
10	Kuwait	07	2.22	9
11	Botswana	06	1.90	10
12	Pakistan	05	1.59	11
13	Thailand	05	1.59	11
14	USA	05	1.59	11
15	Australia	04	1.26	12
16	UK	03	0.95	13
17	Jordan	03	0.95	13
18	Indonesia	02	0.63	14
19	South Korea	02	0.63	14
20	Belgium	02	0.63	14
21	Brunei	01	0.32	15
22	Kenya	01	0.32	15
23	New Zealand	01	0.32	15
24	Spain	01	0.32	15
25	Sudan	01	0.32	15
26	Turkey	01	0.32	15

27	Yemen	01	0.32	15
28	Rajasthan	01	0.32	15
29	Poland	01	0.32	15
30	Czech Republic	01	0.32	15

Table 6: Country wise Distribution

5. 7. Institution wise contribution

As indicated in the below table 7, the highest number (80.31%) of research papers are contributed by academic institutions such as colleges and universities and placed the first position, and followed by Research and Documentation institutions have contributed and placed in the second position with 9.21% and the lowest position has got by the special institutions and others based on the publications.

Institutions	No of Articles	Cumulative Articles	Percentage
Academic Institutions	253	253	80.31
R & D Institutions	29	282	9.21
Special Institutions	19	301	6.04
Others	14	**315**	4.44
Total	**315**		**100.0**

Table 7: Distributions of Papers by Institutions

5. 8. Length of articles

It can be inferred from the table 8 that indicates the length of research papers in term of pages and the average number of articles per page is 16.67 during the study period. Out of 315 scholarly articles, more than (70.79%) 70 percent of papers are between 11-20 pages in length, followed by 51 (16.19%) publications are between 1-10 pages in length, 33 articles (10.48%) are between 21-30 pages in length and 1 article are between 41-50 (0.32%) pages in length and one article has unidentified page number in the year 1997.

No of pages	No of articles	Cumulative articles	Percentages
Unknown pages	1	-	0.32
1-10	51	52	16.19
11-20	223	275	70.79
21-30	33	308	10.48
31-40	6	314	1.90
41-50	1	**315**	0.32
	315		**100.0**

Table 8: Length of articles

6. FINDINGS

The major findings of the study are revealed as follows:

- It shows form the analysis that the greatest number of research outputs in the year 2011 and the lowest number are in 1998 and the degree of collaboration in MJLIS journal is 0.67.

- It observes that the average Exponential growth rate during the period of study and the growth rate showing the increasing trend.

- Author productivity of MJLIS has identified the entire average number of authors per paper range is from 1.53 to 2.90. It finds that the highest number of average authors per paper is 2.90 in 2012.

- The mean relative growth rate during the period has increased and the doubling time of scholarly publications of all sources of this journal has shown a decreasing trend.

- The study analyses the authorship pattern during the period of study that the maximum numbers of the research articles are published by double authors and observes the majority of literature outputs are published by multi- authors.

- Calculating CAI, the positive trend of co-authorship pattern shows among the contributors of this journal by three authors.

- Out of 315 research publications, the majority of articles are published based on Bibliometrics / Scientometric Studies and it has placed in the first rank whereas the least number of papers are by the subjects such as Special Libraries, Library Historiography, Knowledge Management and e- Commerce.

- The maximum numbers of contributions are from Malaysia which has placed the first rank and followed by India has got the second rank and Iran has occupied the third position.

- The highest numbers of research papers are contributed by academic institutions and placed the first rank.

CONCLUSION

Malaysian Journal of Library and Information Science (MJLIS) is one of the principal scholarly peer - reviewed journal in the field of Library and Information Science. The quantitative analysis describes that the majority of scholarly publications published by multi-authors from Malaysia and Indian authors. From the study, it was found that the greatest number of research outputs in the year 2011 and the lowest number were in the year 1998. There was poor collaboration by Brunei, Kenya, New Zealand, Spain, Sudan and Turkey. The average co-

authorship trends for whole authors reflect the world average in the journal and increasing trend of multi-authored articles.

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